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EXAMINER

HWANG, JOON H

ART UNIT	PAPER NUMBER
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2166

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/055,178	HERMANSEN ET AL.	
	Examiner	Art Unit	
	Joon H. Hwang	2166	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 April 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 32-94 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 32-94 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/17/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The applicants amended claims 32-34 and 78-80 in the amendment received on 4/17/07.

The pending claims are 32-94.

Response to Amendment

2. The declaration under 37 CFR 1.132 filed in 4/17/07 is insufficient to overcome the rejection of claims 32-94 based upon Final Report (hereinafter FR) (Name Searching Research Project Phase 2, May 31, 1997, pages 1-67) as set forth in the last Office action because: there is evidence to the contrary – authorship is attributed to Language Analysis Systems, Inc, and not specific individuals. The applicants' statements alone without any factual evidence are not sufficient. See MPEP 716.10.

Response to Arguments

3. Applicant's arguments with respect to claims 32 and 78 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 32 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Project Plan (hereinafter PP) (Name Searching Research Project Phase 2, 6/14/1996, pages 1-18) in view of Oshika et al. ("Improved Retrieval Of Foreign Names From Large Database", 1988, IEEE, pages 480-487).

With respect to claim 32, PP teaches accessing a text input name entered as an input name by one or more of a user or a system (i.e., a query name, section 1 on pages 1-3). PP teaches determining multiple phonetic representations for a portion of the text input name, each of the multiple phonetic representations being for a different pronunciation of the text input name (i.e., multiple IPA representations for different pronunciations ([jei] and [li]) of the query name (Shea), section 2.2 on page 3, section 2.2.1 on pages 3-5, and section 2.2.3.2.1 on pages 10-11). PP teaches comparing each of the multiple phonetic representations of the portion of the text input name to a phonetic representation of a portion of a text known name stored in a database (section 1 on pages 1-3 and section 2.3 on pages 11-13). PP teaches providing an indication of whether the text input name matches the text known name based on the comparing (section 1 on pages 1-3 and section 2.3 on pages 11-13). PP teaches classifying the text input name as belonging to a particular culture (section 2.2.1.1 on page 5). FR does not explicitly disclose classifying a text input name as belonging to a particular

culture by using at least one of a high frequency name data store of names that occur frequently in particular cultures, a morphological element, a string of letters that occur with statistical significance in particular cultures, and one of a title, an affix, and a qualifier of the text input name. However, Oshika teaches classifying a text input name as belonging to a particular culture by using at least one of a high frequency name data store of names that occur frequently in particular cultures, a morphological element, a string of letters that occur with statistical significance in particular cultures, and one of a title, an affix, and a qualifier of the text input name (i.e., a statistical (language) classifier based on HMM regarding a morphological element or a string of letters that occur with statistical significance in particular cultures, section 3.0 on page 48, section 3.2 on page 483-484, and section 3.3 on pages 484-485) in order to improve name searching algorithms thereby yielding better matching and retrieval performance (section 1.0 on page 480). Therefore, based on FR in view of Oshika, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of Oshika to the system of FR in order to improve name searching algorithms thereby yielding better matching and retrieval performance.

The limitations of claim 78 are rejected in the analysis of claim 32 above, and the claim is rejected on that basis.

6. Claims 32-52, 58, 61-63, 66, 70, 76-89, and 93-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshika et al. ("Improved Retrieval Of Foreign Names

From Large Database", 1988, IEEE, pages 480-487) in view of Project Plan (hereinafter PP) (Name Searching Research Project Phase 2, 6/14/1996, pages 1-18).

With respect to claim 32, Oshika teaches classifying a text input name as belonging to a particular culture by using at least one of a high frequency name data store of names that occur frequently in particular cultures, a morphological element, a string of letters that occur with statistical significance in particular cultures, and one of a title, an affix, and a qualifier of the text input name (i.e., a statistical (language) classifier based on HMM regarding a morphological element or a string of letters that occur with statistical significance in particular cultures, section 3.0 on page 48, section 3.2 on page 483-484, and section 3.3 on pages 484-485). Oshika teaches accessing the text input name entered as an input name by one or more of a user or a system (section 1.0 on page 480 and section 2.0 on page 480-481). Oshika teaches determining multiple phonetic representations for a portion of the text input name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 5.0 on pages 485-486, and section 6.0 on page 486). Oshika teaches comparing each of the multiple phonetic representations of the portion of the text input name to a phonetic representation of a portion of the text known name stored in a database (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 5.0 on pages 485-486, and section 6.0 on page 486). Oshika teaches providing an indication of whether the text input name matches the text known name based on the comparing (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 5.0 on pages 485-486, and section 6.0 on page 486). Oshika does not explicitly disclose each of the

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multiple phonetic representations being for a different pronunciation of the text input name. However, PP teaches determining multiple phonetic representations for a portion of the text input name, each of the multiple phonetic representations being for a different pronunciation of the text input name (i.e., multiple IPA representations for different pronunciations ([ʃei] and [ʃɪ]) of the query name (Shea), section 2.2 on page 3, section 2.2.1 on pages 3-5, and section 2.2.3.2.1 on pages 10-11) in order to improve the quality of automatic name searching (section 1.1 on page 1). Therefore, based on Oshika in view of PP, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of PP to the system of Oshika in order to improve the quality of automatic name searching.

With respect to claim 33, Oshika teaches selecting a rule based on the classifying of the text input name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486). Oshika teaches applying the rule in determining the multiple phonetic representations for the portion of the text input name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 34, Oshika teaches selecting a multiple rules based on the classifying of the text input name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486). Oshika teaches applying the multiple rules in determining the multiple phonetic representations for the portion of the text input name (section 1.0 on page 480, section

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2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 35, PP further teaches determining articulatory similarity between at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). PP also teaches providing an indication of articulatory similarity between the text input name and the text known name, the indication of articulatory similarity being based on the determining of articulatory similarity (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claim 35 are rejected in the analysis of claim 32 above, and the claim is rejected on that basis.

With respect to claim 36, PP further teaches identifying an articulatory variation between one or more of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name, and classifying the articulatory variation as likely or unlikely, and wherein determining articulatory similarity comprises attributing less significance to the articulatory variation, so as to indicate greater articulatory similarity, if the articulatory variation is likely than if the articulatory variation is unlikely (section 1.1 on page 1, section 1.2 on pages 1-3, sections 2.2.2 on pages 8-9, section 2.3 on pages 11-12, section 2.3.2 on page 12, and

section 2.3.3 on pages 12-13). Therefore, the limitations of claim 36 are rejected in the analysis of claim 35 above, and the claim is rejected on that basis.

With respect to claim 37, PP further teaches determining articulatory similarity based on a culture-specific rule (section 1.1 on page 1 and section 1.2 on pages 1-3). Therefore, the limitations of claim 37 are rejected in the analysis of claim 35 above, and the claim is rejected on that basis.

With respect to claim 38, PP further teaches determining, for the at least one of the multiple phonetic representations of the portion of the text input name, how many phonetic features are in common between corresponding portions of the at least one phonetic representation of the portion of the text input name and the phonetic representation of the portion of the text known name and providing an indication that is based on the determining of how many phonetic features are in common (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claim 38 are rejected in the analysis of claim 35 above, and the claim is rejected on that basis.

With respect to claim 39, PP further teaches an International Phonetic Alphabet (IPA) representation of the text input name and an IPA representation of the portion of the text known name (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). PP teaches determining how many phonetic features are in common between corresponding symbols from the IPA representation of the portion of the text input name and the IPA representation of the portion of the text known name (section 1.1 on page 1, section 1.2

on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claim 39 are rejected in the analysis of claim 38 above, and the claim is rejected on that basis.

With respect to claim 40, PP further teaches determining how many phonetic features are in common between corresponding symbols from the IPA representation of the portion of the text input name and the IPA representation of the portion of the text known name is based on a culture-specific rule (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claim 40 are rejected in the analysis of claim 39 above, and the claim is rejected on that basis.

With respect to claim 41, PP further teaches determining multiple representation that are each based on an IPA (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claim 41 are rejected in the analysis of claim 32 above, and the claim is rejected on that basis.

With respect to claim 42, Oshika teaches comparing each of the multiple phonetic representations of the portion of the text input name to a second phonetic representation of the portion of the text known name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 43, Oshika teaches accessing a character representation of the text input name (section 1.0 on page 480, section 2.0 on page 480-481, and section 3.0 on page 481),

With respect to claim 44, PP further teaches using a rule relating character representations to sounds (i.e., rules based on phonological (articulatory) principles, section 2.2 on page 3). Therefore, the limitations of claim 44 are rejected in the analysis of claims 32 and 43 above, and the claim is rejected on that basis.

With respect to claim 45, Oshika teaches the character representation of the text input name reflects a spelling from a specific culture and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the specific culture (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 46, Oshika teaches the character representation of the text input name reflects a spelling from a specific culture, the text input name belongs to another culture that is different from the specific culture, and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the specific culture (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 47, Oshika teaches the character representation of the text input name reflects a spelling from a specific culture, the text input name belongs to

another culture that is different from the specific culture, and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the other culture (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 48, Oshika teaches the character representation of the text input name reflects a spelling from a specific culture, the text input name belongs to the specific culture, and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the specific culture (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claims 49-50, PP further teaches providing an indication that the text input name exactly or not exactly matches the text known name (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claims 49-50 are rejected in the analysis of claim 32 above, and these claims are rejected on that basis.

With respect to claim 51, Oshika teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, corresponding parts of the at least one phonetic representation of the portion of the text input name and the phonetic representation of the portion of the text known name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

With respect to claim 52, Oshika teaches parts that correspond at a syntactic level (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, and section 4.0 on page 485).

With respect to claim 58, PP further teaches parts that correspond at a phonologic level (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claims 58 are rejected in the analysis of claims 32 and 51 above, and the claim is rejected on that basis.

With respect to claim 61, PP further teaches providing a rank-ordered list of names, with rank-order indicating a likelihood of matching the text input name (section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claims 61 are rejected in the analysis of claim 32 above, and the claim is rejected on that basis.

With respect to claim 62, PP further teaches ranking names on the rank-ordered list based on a degree of articulatory similarity between names on the rank-ordered list and the text input name (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claims 62 are rejected in the analysis of claim 61 above, and the claim is rejected on that basis.

With respect to claim 63, PP further teaches the rank-ordered list of names includes the text known name (section 2.3.2 on page 12, and section 2.3.3 on pages

12-13). Therefore, the limitations of claims 63 are rejected in the analysis of claim 61 above, and the claim is rejected on that basis.

With respect to claim 66, PP further teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, an initial sound of the at least one of the multiple phonetic representations of the portion of the text input name and an initial sound of the phonetic representation of the portion of the text known name, and basing rank-order of the text known name on the comparing of initial sounds (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claims 66 are rejected in the analysis of claim 63 above, and the claim is rejected on that basis.

With respect to claim 70, PP further teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, orthographic similarity between the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name, and basing rank-order of the text known name on the comparing of orthographic similarity (section 1.1 on page 1, section 1.2 on pages 1-3, section 2.2 on page 3, and section 2.2.1 on pages 3-5, section 2.3 on pages 11-12, section 2.3.2 on page 12, and section 2.3.3 on pages 12-13). Therefore, the limitations of claims 70 are rejected in the analysis of claim 63 above, and the claim is rejected on that basis.

With respect to claims 76-77, Oshika teaches accessing a portion of a complete name or the entire text input name (section 1.0 on page 480, section 2.0 on page 480-481, section 3.0 on page 481, section 4.0 on page 485, and section 6.0 on page 486).

The limitations of claims 78-88 are rejected in the analysis of claims 32-42 above, and these claims are rejected on that basis.

The limitations of claim 89 are rejected in the analysis of claim 51 above, and the claim is rejected on that basis.

The limitations of claims 93-94 are rejected in the analysis of claims 61-62 above, and these claims are rejected on that basis.

7. Claims 53-54, 57, 60, 64-65, 67-69, 71-75, and 90-92 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oshika et al. ("Improved Retrieval Of Foreign Names From Large Database", 1988, IEEE, pages 480-487) in view of Project Plan (hereinafter PP) (Name Searching Research Project Phase 2, 6/14/1996, pages 1-18), and further in view of Hermansen ("Automatic Name Searching in Large Data Bases of International Names," 1985).

With respect to claims 53-54, Oshika and PP do not explicitly disclose parts that correspond at a syllabic level. However, Hermansen teaches parts that correspond at a syllabic level including a first part that relates to a left-most syllable of the portion of the input name and a second part that relates to a left-most syllable of the portion of the known name (chapter 4 on pages 68-83 and chapter 6 on pages 111-137) for an effective name searching. Therefore, based on Oshika in view of PP, and further in

view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of Hermansen to the system of Oshika for syllabic level of parts in order to search and match names effectively.

With respect to claim 57, Oshika and PP do not explicitly disclose parts that correspond at a morphologic level. However, Hermansen teaches parts that correspond at a morphologic level (chapter 2 on pages 14-41, chapter 4 on pages 68-83, and chapter 6 on pages 111-137) for an effective name searching. Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of Hermansen to the system of Oshika for a morphologic and a phonologic level of parts in order to search and match names effectively.

With respect to claim 60, Oshika and PP do not explicitly disclose comparing sonority level. However, Hermansen teaches generating name variants based on phonetic, phonetic equivalence or phonic coding, which try to combine similar sounding consonant teaching sonority (section 2.5 on page 23-24, section 2.5.2 on pages 28-30, and chapter 4 on pages 68-83). Hermansen also teaches providing an indication of similarity between the input name and the known name, wherein the input name is the variant based on the phonetic representation (section 2.1 on pages 15-16, section 3.2 on page 46-50, section 3.3 on pages 52-55, and section 3.4 on pages 55-59). Thus, these teach a sonority level comparing. Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the

system of Oshika for a sonority level comparing in order to search and measure a likelihood of a name matching effectively.

With respect to claim 64, Oshika and PP do not explicitly disclose comparing sonority level. However, Hermansen teaches generating name variants based on phonetic, phonetic equivalence or phonic coding, which try to combine similar sounding consonant teaching sonority (section 2.5 on page 23-24, section 2.5.2 on pages 28-30, and chapter 4 on pages 68-83). Hermansen also teaches providing an indication of similarity between the input name and the known name, wherein the input name is the variant based on the phonetic representation (section 2.1 on pages 15-16, section 3.2 on page 46-50, section 3.3 on pages 52-55, and section 3.4 on pages 55-59). Thus, these teach a sonority level comparing. Hermansen teaches providing a rank-ordered list of names, with rank-order indicating a likelihood of matching the input name (chapter 2 on pages 14-41). Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the system of Oshika for a sonority level comparing in order to search and measure a likelihood of a name matching effectively.

With respect to claim 65, Oshika and PP do not explicitly disclose a morphological element. However, Hermansen teaches determining whether the known name includes a morphological element and providing a rank-ordered list of names, with rank-order indicating a likelihood of matching the input name (chapter 2 on pages 14-41, chapter 4 on pages 68-83, chapter 5 on pages 84-110, and chapter 6 on pages 111-

137). Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the system of Oshika for a morphological comparing in order to search and measure a likelihood of a name matching effectively.

With respect to claims 67-68, Oshika and PP do not explicitly disclose comparing syllabic structure. However, Hermansen teaches comparing, for at least one of the multiple phonetic representations of the portion of the input name, syllabic structure of the at least one of the multiple phonetic representations of the portion of the input name and the phonetic representation of the portion of the known name and providing a rank-ordered list of names including the known name, with rank-order indicating a likelihood of matching the input name (chapter 2 on pages 14-41, chapter 4 on pages 68-83, chapter 5 on pages 84-110, and chapter 6 on pages 111-137). Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the system of Oshika for comparing syllabic structure in order to search and measure a likelihood of a name matching effectively.

With respect to claim 69, Oshika and PP do not explicitly disclose comparing location of stress. However, Hermansen teaches comparing, for at least one of the multiple phonetic representations of the portion of the input name, location of stress in the at least one of the multiple phonetic representations of the portion of the input name and the phonetic representation of the portion of the known name and providing a rank-

ordered list of names including the known name, with rank-order indicating a likelihood of matching the input name (chapter 2 on pages 14-41, chapter 4 on pages 68-83, chapter 5 on pages 84-110, and chapter 6 on pages 111-137). Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the system of Oshika for a location of stress in order to search and measure a likelihood of a name matching effectively.

With respect to claim 71, Oshika and PP do not explicitly disclose comparing includes discounting. However, Hermansen teaches comparing each of the multiple phonetic representations of the portion of the input name to the phonetic representation of the portion of the known name comprises discounting, for at least one of the multiple phonetic representations of the portion of the input name, an occurrence of a likely articulatory variation between the at least one of the multiple phonetic representation of the portion of the input name and the phonetic representation of the portion of the known name (chapter 3 on pages 42-67, chapter 4 on pages 68-83, and chapter 6 on pages 111-137). Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the system of Oshika for comparing includes discounting in order to search and measure a likelihood of a name matching effectively.

With respect to claims 72-75, Oshika and PP do not explicitly disclose a particle in the input name. However, Hermansen teaches identifying a particle in the input

name and attributing less significance to the particle, than to another part of the input name, in providing the indication of whether the input name matches the known name, wherein the particle comprises an affix. Hermansen also teaches deciding not to determine and compare a phonetic representation of the particle attributed less significance for faster search processing (chapter 3 on pages 42-67, chapter 4 on pages 68-83, chapter 5 on pages 84-110, and chapter 6 on pages 111-137). Therefore, based on Oshika in view of PP, and further in view of Hermansen, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teachings of Hermansen to the system of Oshika for a particle in the input name in order to search and match names effectively.

The limitations of claims 90-91 are rejected in the analysis of claims 53-54 above, and these claims are rejected on that basis.

The limitations of claim 92 are rejected in the analysis of claim 60 above, and the claim is rejected on that basis.

8. Claims 32-94 are rejected under 35 U.S.C. 103(a) as being unpatentable over Final Report (hereinafter FR) (Name Searching Research Project Phase 2, May 31, 1997, pages 1-67) in view of Oshika et al. ("Improved Retrieval Of Foreign Names From Large Database", 1988, IEEE, pages 480-487).

With respect to claim 32, FR teaches accessing a text input name entered as an input name by one or more of a user or a system (i.e., a query name, section 4.1.1 on page 9). FR teaches determining multiple phonetic representations for a portion of the

text input name, each of the multiple phonetic representations being for a different pronunciation of the text input name (section 4.1.10 on page 15). FR teaches comparing each of the multiple phonetic representations of the portion of the text input name to a phonetic representation of a portion of a text known name stored in a database (section 4.2.5.1 on page 27). FR teaches providing an indication of whether the text input name matches the text known name based on the comparing (section 4.2.5.1 on page 27 and query results on page 34). FR teaches classifying the text input name as belonging to a particular culture (section 3.3.2 on pages 6-7 and section 3.3.3 on pages 7-8). FR does not explicitly disclose classifying a text input name as belonging to a particular culture by using at least one of a high frequency name data store of names that occur frequently in particular cultures, a morphological element, a string of letters that occur with statistical significance in particular cultures, and one of a title, an affix, and a qualifier of the text input name. However, Oshika teaches classifying a text input name as belonging to a particular culture by using at least one of a high frequency name data store of names that occur frequently in particular cultures, a morphological element, a string of letters that occur with statistical significance in particular cultures, and one of a title, an affix, and a qualifier of the text input name (i.e., a statistical (language) classifier based on HMM regarding a morphological element or a string of letters that occur with statistical significance in particular cultures, section 3.0 on page 48, section 3.2 on page 483-484, and section 3.3 on pages 484-485) in order to improve name searching algorithms thereby yielding better matching and retrieval performance (section 1.0 on page 480). Therefore, based on FR in view of Oshika, it

would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the teaching of Oshika to the system of FR in order to improve name searching algorithms thereby yielding better matching and retrieval performance.

With respect to claim 33, FR teaches selecting a rule based on the classifying of the text input name (section 4.1.11.8 on pages 19-20). FR teaches applying the rule in determining the multiple phonetic representations for the portion of the text input name (section 4.1.11.8 on pages 19-20 and section 4.1.13 on pages 20-21).

With respect to claim 34, FR teaches selecting multiple rules based on the classifying of the text input name (section 4.1.11.8 on pages 19-20, section 4.1.12 on page 20, and section 4.1.13 on pages 20-21). FR teaches applying the multiple rules in determining the multiple phonetic representations for the portion of the text input name (section 4.1.11.8 on pages 19-20 and section 4.1.13 on pages 20-21).

With respect to claim 35, FR teaches comparing each of the multiple phonetic representations of the portion of the text input name to the phonetic representation of the portion of the text known name comprises determining articulatory similarity between at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name (section 2 on pages 2-3 and section 4.2.1 on pages 21-24). FR teaches providing the indication comprises providing an indication of articulatory similarity between the text input name and the text known name, the indication of articulatory similarity being based on the determining of articulatory similarity (section 4.2.5.1 on page 27 and query results on page 34).

With respect to claim 36, FR teaches identifying an articulatory variation between one or more of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name (section 2 on pages 2-3 and section 4.2.1 on pages 21-24). FR teaches classifying the articulatory variation as likely or unlikely (i.e., sonority hierarchy, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33). FR teaches determining articulatory similarity comprises attributing less significance to the articulatory variation, so as to indicate greater articulatory similarity, if the articulatory variation is likely than if the articulatory variation is unlikely (section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 37, FR teaches determining articulatory similarity based on a culture-specific rule (section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 38, FR teaches determining articulatory similarity between at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name comprises determining, for the at least one of the multiple phonetic representations of the portion of the text input name, how many phonetic features are in common between corresponding portions of the at least one phonetic representation of the portion of the text input name and the phonetic representation of the portion of the text known name (i.e., articulatory distance, section 4.2.1 on pages 21-24), and providing the indication of

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articulatory similarity comprises providing an indication that is based on the determining of how many phonetic features are in common (section 4.2.5.1 on page 27 and query results on page 34).

With respect to claim 39, FR teaches the at least one phonetic representation of the portion of the text input name comprises an International Phonetic Alphabet (IPA) representation of the text input name (section 4.1.1 on page 9), the phonetic representation of the portion of the text known name comprises an IPA representation of the portion of the text known name (section 4.1.1 on page 9), and determining how many phonetic features are in common between corresponding portions of the at least one phonetic representation of the portion of the text input name and the phonetic representation of the portion of the text known name comprises determining how many phonetic features are in common between corresponding symbols from the IPA representation of the portion of the text input name and the IPA representation of the portion of the text known name (section 4.1.1 on page 9 and section 4.2.1 on pages 21-24).

With respect to claim 40, FR teaches determining how many phonetic features are in common between corresponding symbols from the IPA representation of the portion of the text input name and the IPA representation of the portion of the text known name is based on a culture-specific rule (section 4.1.1 on page 9, section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 41, FR teaches determining multiple phonetic representation comprises determining multiple representations that are each based on an IPA (section 4.1.1 on page 9).

With respect to claim 42, FR teaches comparing each of the multiple phonetic representations of the portion of the input name to a second phonetic representation of the portion of the text known name (section 4.1.10 on page 15).

With respect to claim 43, FR teaches accessing the text input name comprises accessing a character representation of the text input name (section 4.1.8 on page 14 and section 4.1.10 on page 15).

With respect to claim 44, FR teaches determining multiple phonetic representations comprises using a rule relating character representations to sounds (section 4.1.1 on page 9, section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 45, FR teaches the character representation of the text input name reflects a spelling from a specific culture and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the specific culture (section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 46, FR teaches the character representation of the text input name reflects a spelling from a specific culture, the text input name belongs to

another culture that is different from the specific culture, and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the specific culture (section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 47, FR teaches the character representation of the text input name reflects a spelling from a specific culture, the text input name belongs to another culture that is different from the specific culture, and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the other culture (section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 48, FR teaches the character representation of the text input name reflects a spelling from a specific culture, the text input name belongs to the specific culture, and determining multiple phonetic representations comprises using a rule for determining phonetic representations, the rule being based on the specific culture (section 4.1.11.8 on pages 19-20, section 4.1.13 on pages 20-21, section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 49, FR teaches providing the indication comprises providing an indication that the text input name exactly matches the text known name (section 4.2.7.2.2 on pages 36-37 and section 5.2 on pages 51-52).

With respect to claim 50, FR teaches providing the indication comprises providing an indication that the text input name dose not exactly matches the text known name (section 4.2.7.2.2 on pages 36-37 and section 5.2 on pages 51-52).

With respect to claim 51, FR teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, corresponding parts of the at least one phonetic representation of the portion of the text input name and the phonetic representation of the portion of the text known name (section 2 on pages 2-3, section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 52, FR teaches the corresponding parts include parts that correspond at a syntactic level (section 5.2 on pages 51-52).

With respect to claim 53, FR teaches the corresponding parts include parts that correspond at a syllabic level (section 4.2.6 on pages 28-29 and section 4.2.6.2 on pages 30-31).

With respect to claim 54, FR teaches the parts that correspond at the syllabic level include a first part that relates to a left-most syllable of the portion of the text input name and a second part that relates to a left-most syllable of the portion of the text known name (section 4.2.6.3 on pages 31-33 and section 4.2.7 on pages 33-35).

With respect to claim 55, FR teaches the first part further relates to both an initial phonologic element and a final phonologic element of the left-most syllable of the portion of the text input name and the second part further relates to an initial phonologic element and a final phonologic element of the left-most syllable of the portion of the text

known name (section 4.2.6.3 on pages 31-33, section 4.2.7 on pages 33-35, and section 5.2 on pages 51-52).

With respect to claim 56, FR teaches producing a result from the comparing of the first part and the second part and determining, based on the result, whether to continue comparing the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name (section 4.2.6.3 on pages 31-33, section 4.2.7 on pages 33-35, and section 5.2 on pages 51-52).

With respect to claim 57, FR teaches corresponding parts include parts that correspond at a morphologic level (section 4.2.1 on page 21-24).

With respect to claim 58, FR teaches corresponding parts include parts that correspond at a phonologic level (section 4.2.1 on page 21-24).

With respect to claim 59, FR teaches the parts that correspond at the phonologic level include a first part that relates to a final phoneme of the portion of the text input name and a second part that relates to a final phoneme of the portion of the text known name (section 4.2.1 on page 21-24 and section 4.2.4 on page 24-26).

With respect to claim 60, FR teaches comparing each of the multiple phonetic representations of the portion of the text input name to the phonetic representation of the portion of the text known name comprises comparing, for at least one of the multiple phonetic representations of the portion of the text input name, sonority level between at least part of the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name

(section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33).

With respect to claim 61, FR teaches providing the indication of whether the text input name matches the text known name comprise providing a rank-ordered list of names, with rank-order indicating a likelihood of matching the text input name (section 4.2.5.1 on page 27 and query results on page 34).

With respect to claim 62, FR teaches providing the rank-ordered list of names comprises ranking names on the rank-ordered list based on a degree of articulatory similarity between names on the rank-ordered list and the text input name (section 4.2.5.1 on page 27 and query results on page 34).

With respect to claim 63, FR teaches the rank-ordered list of name includes the text known name (section 4.2.5.1 on page 27 and query results on page 34).

With respect to claim 64, FR teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, sonority level between at least part of the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name (section 4.2.1 on pages 21-24, section 4.2.5.2 on pages 27-28, and section 4.2.6.3 on pages 31-33) and basing rank-order of the text known name on the comparing of sonority level (section 4.2.5.1 on page 27 and query results on page 34).

With respect to claim 65, FR teaches determining whether the text known name includes a morphological element, and basing rank-order of the text known name on

whether the text known name includes a morphological element (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 66, FR teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, an initial sound of the at least one of the multiple phonetic representations of the portion of the text input name and an initial sound of the phonetic representation of the portion of the text known name, and basing rank-order of the text known name on the comparing of initial sounds (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 67, FR teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, syllabic structure of the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name, and basing rank-order of the text known name on the comparing of syllabic structure (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, query results on page 34, and section 4.2.6.2 on pages 30-31).

With respect to claim 68, FR teaches comparing syllabic similarity (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, query results on page 34, and section 4.2.6.2 on pages 30-31).

With respect to claim 69, FR teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, location of stress in the at least one of the multiple phonetic representations of the portion of the text input name

and the phonetic representation of the portion of the text known name, and basing rank-order of the text known name on the comparing of location of stress (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, section 4.2.6 on pages 28-29, and query results on page 34).

With respect to claim 70, FR teaches comparing, for at least one of the multiple phonetic representations of the portion of the text input name, orthographic similarity between the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name, and basing rank-order of the text known name on the comparing of orthographic similarity (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, query results on page 34, and section 4.2.8.1.4 on pages 43-44).

With respect to claim 71, FR teaches comparing each of the multiple phonetic representations of the portion of the text input name to the phonetic representation of the portion of the text known name comprises discounting, for at least one of the multiple phonetic representations of the portion of the text input name, an occurrence of a likely articulatory variation between the at least one of the multiple phonetic representations of the portion of the text input name and the phonetic representation of the portion of the text known name (section 4.1.11.7 on page 18).

With respect to claim 72, FR teaches identifying a particle in the text input, and attributing less significance to the particle, than to another part of the text input name, in providing the indication of whether the text input name matches the text known name

(section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 73, FR teaches attributes less significance to the particle comprises deciding not to determine a phonetic representation of the particle (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 74, FR teaches attributes less significance to the particle comprises deciding not to compare a phonetic representation of the particle to a phonetic representation of a part of the text known name (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 75, FR teaches identifying a title, affix, or qualifier as particle (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, and query results on page 34).

With respect to claim 76, FR teaches accessing a portion of a complete name (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, query results on page 34, and section 5.2 on page 51-52).

With respect to claim 77, FR teaches the entire input name (section 4.2.1 on pages 21-24, section 4.2.5.1 on page 27, query results on page 34, and section 5.2 on page 51-52).

Claims 78-94 are essentially the same as claims 32-42, 51, 53-54, and 60-62 except that it sets forth the claimed invention as a system rather than a method and rejected for the same reasons as applied hereinabove.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joon H. Hwang whose telephone number is 571-272-4036. The examiner can normally be reached on 9:30-6:00(M~F).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain T. Alam can be reached on 571-272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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